Real-Time Transit Information System Architecture

REGIONAL REAL-TIME SIGNS PHYSICAL REQUIREMENTS AND SPECIFICATIONS

Version 1.1

Prepared for:

Metropolitan Transportation Commission

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DOCUMENT HISTORY

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Introduction

As part of the Regional Real-Time Transit Information System, transit agencies will be sending MTC/511 transit arrival/departure predictions for this information to be made available on the phone and the 511 website. In addition, MTC will disseminate predictions to a network of regional signs located at transit hubs. The transit hub signs will display the predictions for all applicable agencies and routes that service the specific transit hub.

MTC would like to manage the content and format of the messages displayed on the regional signs so that they provide useful and consistent information to Bay Area transit users. As such, MTC, with input from the transit agencies, is developing a set of principles to ensure that the signs display the proper information in the agreed upon format.

Proposed System

Due to the complex nature of trying to maintain consistency of content and format, and the importance to keep costs to the agencies low, it is important to design the system in such a way to best accomplish both goals.

The solution is to send the prediction data to a web server located at the 511 Traveler Information Center (TIC). This web server will be configured such that it will contain separate web pages for each transit hub slated to have signs. At each hub, the regional signs or monitors will be able to display the contents of the web page assigned for that specific hub. The web server will be configurable to allow the maximum control over the content and format of the messages. Some of the configurations will include, but not be limited to:

- For each hub: Agency, route and direction to be displayed on each line, and the display order of the routes.

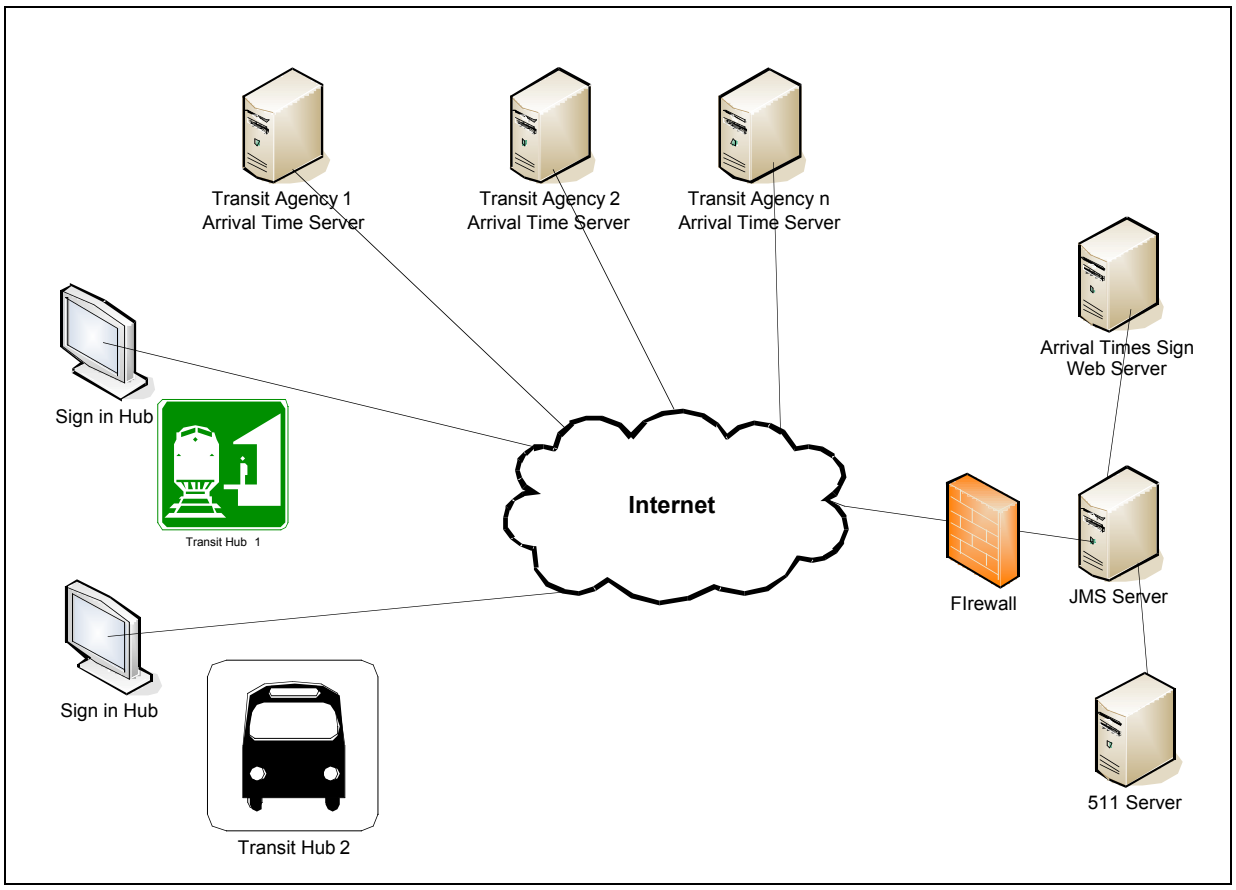
- For the overall system: font, number of predictions per line, colors, display time for each page when alternating pages are used, how far into the future must departure times be for display, timeout values, and error messages.

Some of the benefits of this solution include:

- Reduction of latency: Since there will be no additional communications of data to the hubs, data on the signs will be updated as often as the web pages are refreshed.

- More availability to the public: If desired, the web pages could be made available to the public for display on home computers or PDAs.

The following figure illustrates a high level concept of the proposed regional sign system.



In order to maintain a sense of consistency of the regional signs under the Regional Real-Time Transit Information System, the following sections are minimum requirements and specifications for the signs and the sign controller. In essence, the signs are simply large screen monitors connected to, or integrated with, a computer that displays a specific web page.

Sign Requirements and Specifications

1. The regional sign shall have the ability to display the specific contents of a web page generated by a website for real-time transit information.
2. Scrolling signs shall not be permitted, but page alternation will be permitted. The display time for each page when pages are alternated will be subject to a pre-defined timer.
3. The signs/monitors shall meet the following minimum specifications:

   - Minimum size: 45” diagonal (active display area)
   - Minimum colors: 16 million
   - Multiple inputs: Single signal connector (HD15); optional connectors: DVI, composite, S-video
   - Brightness levels: 600 cd/m^2 (candelas per square meter)
   - Minimum resolution: 1024x768

- Contrast Ratio: 800:1
- Viewing Angles (Horizontal/Vertical): 178 degrees/178 degrees

Sign Controller Requirements and Specifications

1. All regional real-time signs within a hub will be networked together in order to have a single point of communications to the 511 system to reduce communications costs.
2. At least one sign in a hub shall have Internet access (for website connection). All other signs can use the same Internet connection in a networked environment.
3. The sign/monitor controller (computer) shall meet the following minimum specifications:

    - Memory: 1GB RAM
    - CPU: 1.5GHz Pentium or similar
    - Hardware Drive: 50GB
    - Ethernet: 10/100 network interface card
    - Connectors: EIA-232 (2 ports), firewire (1394, 2 ports), USB (2 ports)
    - Keyboard/mouse: PS/2
    - Combination CD RW/DVD ROM drive
    - Humidity Operation: 5~90% non condensing

Considerations

The following are specification items that should be considered based on the specific situations at each hub and the locations for the regional signs.

- Wireless connectivity (802.11 card): For those hubs that do not have a wired network environment and need wireless access
- Anti-glare screen elements: For those hubs that will have regional signs subject to indirect lighting or sunlight.
- Sealed enclosure (IP65 rated enclosure): For those hubs that will require a regional sign and/or the sign/monitor controller be placed outside and subject to wind, dust, moisture, and rain.
- Extended operating temperature range of 0 – 50 degrees Celsius: For those hubs that will require a regional sign to be subject to harsher environmental conditions compared with an indoor location.
- Sign/monitor controller included inside sign (i.e. panel PC): For hubs where placement of the controller is problematic or a panel PC is the preferred solution since the sign is located outside. The embedded PC or computer shall be subject to the same computer requirements outlined above under the Sign Controller Requirements and Specifications section. For outdoor installations, the panel PC must adhere to the IP65 rating.